MICROBIOLOGICAL REVIEWS

VOLUME 49 ● DECEMBER 1985 ● NUMBER 4

JOHN L. INGRAHAM, Editor (1989) University of California, Davis

EDITORIAL BOARD

Giovanna Ferro-Luzzi Ames (1985) Rowland H. Davis (1987) Randall K. Holmes (1985)

Wolfgang K. Joklik (1985) Terry A. Krulwich (1985) Robert M. Macnab (1985) Norman D. Reed (1986) David Schlessinger (1987) Meyer J. Wolin (1986)

Helen R. Whiteley, Chairman, Publications Board
Linda M. Illig, Managing Editor, Journals John P. Evans, Production Editor

Microbiological Reviews considers for publication both solicited and unsolicited reviews and monographs dealing with all aspects of microbiology. Manuscripts, proposals, and correspondence regarding editorial matters should be addressed to the Editor, John L. Ingraham, Department of Bacteriology, University of California, Davis, CA 95616.

Microbiological Reviews (ISSN 0146-0749) is published quarterly (March, June, September, and December), one volume per year, by the American Society for Microbiology. The nonmember subscription price is \$77 per year; single copies are \$21. The member subscription price is \$16 (foreign, \$26 [surface rate]) per year; single issues are \$7. Correspondence relating to subscriptions, reprints, defective copies, availability of back issues, lost or late proofs, disposition of submitted manuscripts, and general editorial matters should be directed to the ASM Publications Department, 1913 I St., NW, Washington, DC 20006 (phone: 202 833-9680).

Claims for missing issues from residents of the United States, Canada, and Mexico must be submitted within 3 months after publication of the issues; residents of all other countries must submit claims within 6 months of publication of the issues. Claims for issues missing because of failure to report an address change or for issues "missing from files" will not be allowed.

日本:価格は外貨表示とは関係なく円建

Second-class postage paid at Washington, DC 20006, and at additional mailing offices. POSTMASTER: Send address changes to *Microbiological Reviews*, ASM, 1913 I St., NW, Washington, DC 20006.

Made in the United States of America. Copyright © 1985, American Society for Microbiology. All Rights Reserved.

The code at the top of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal use or for personal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per-copy fee through the Copyright Clearance Center, Inc., 21 Congress St., Salem, MA 01970, for copying beyond that permitted by Sections 107 and 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

1986 APPLICATION FOR FULL MEMBERSHIP IN THE AMERICAN SOCIETY FOR MICROBIOLOGY

1913 I Street, NW ● Washington, DC 20006 ● (202) 833-9680

COMPLETE ALL INFORMATION REQUESTED AND RETURN FORM WITH REMITTANCE IN U.S. FLINDS

	COMPLETE	ALL INFORMATIO	N REGUESTED	AND RETURN F	OHIVI WITE	A MEMILIANC	E IN U.S. FUN	103
Eligibility	ASM welcom gree or equiva	nes to full members alent in microbiolo	ship anyone who gy or a related fie	is interested in ld.	its objecti	ves and has a	minimum of a	bachelor's de
Initiation	Memberships are initiated and renewed in January each year. Unless there are directions to the contrary, membership nominations received prior to November 1 are credited to the current year, and back issues of the selected publications for the current year are furnished, if available. Nominations received after November 1 will become effective the following January.							
	NAME	FIRST		INITIAL	LAS	Т		
	CITY		STATE/PROVIN	CÉ	ZIP/POSTA	L CODE	COUNT	RY
	PHONE NUMB	BER()		YEAR OF BIR	тн			
		REE						
	MAJOR SUBJE	ECT						
	GRANTING IN	STITUTION						
	PRESENT POS	SITION						
	CURRENT SCI	ENTIFIC AREA						
	SIGNATURE DATE							
	*NOMINATED	BY						
	*If you are not a	associated with an AS	SM nominating men	SIGNATURE OF AS ober, you can still se	м мемвек end in this fu	ıll member applic	cation form and w	e will contact yo
Dues		for 1986 are \$61.00 3.00 to subscription						
Journals		: s my dues paymer nd me the following						
	Antimiorobiol	Agents and Cham	othoropy		\$35	Non-U.S.		Amount
		Agents and Chem Environmental Mic			ანი 35	\$49 49	Φ	
		d Cellular Biology	lobiology		41	49 54		
	Infection and	-,			41	54 54		,
		Journal of Systema	atic Bacteriology		35	35		
	Journal of Ba		and Buoterrology		41	54		
		nical Microbiology	,		35	49		
	Journal of Viro	0,			41	54		
	Microbiologic	al Reviews			18	29		
	_					Total Journ	nal Fees \$	
				Sub	tract your	\$43 Member J	ournals Credit	\$ -43
							nter zero) \$	
							bership Dues	
	Total (Dues plus Journals). If total is less than \$61.00, enter \$61.00 \$							
	PAYMENT IN U.S. DOLLARS MUST ACCOMPANY APPLICATION							
	A membership card, voting registration form, Placement Committee form and the journal(s) of your choice will be sent within 90 days upon completion of processing.							
	Dues for individual membership in ASM are tax deductible. Rates are for 1986 only.							
	Non-U.S. applicants remit in U.S. dollars by check or draft payable to ASM through a U.S. bank located within the Continental U.S. Applicants from Canada may use check made out in U.S. dollars and drawn on a Canadian bank.							
		i Canada may use ch S. applicants may ch					olease fill in the t	oox below.
	İ							
		[] VISA # [] MASTE	RCARD #			RATION DATE		
		TODAY'S DATE		SIGNATURE -				

Minimum Charge \$15.00

TODAYS DATE ___

U.S. Post STATEMENT OF OWNERSHIP, MA Required by 35	NAGEMENT AND CIRCULA	TION
NA TITLE OF PUBLICATION Microbiological Reviews	18. PUBLICATION NO	2. DATE OF FILING 1 October 1985
3. FREQUENCY OF ISSUE Quarterly	3A. NO. OF ISSUES PUBLISH ANNUALLY 4	ED 3B. ANNUAL SUBSCRIPTION PRICE
4. COMPLETE MAILING ADDRESS OF KNOWN OFFICE OF PUBLICATION American Society for Microbiology	(Street, City, County, State and ZIP+4	\$16 mbr., \$77 nonr
1913 I Street, N.W., Washington, D.C.	20006	
5. COMPLETE MAILING ADDRESS OF THE HEADQUARTERS OF GENER	AL BUSINESS OFFICES OF THE PUBL	ISHER (Not printer)
(same as above)		
6. FULL NAMES AND COMPLETE MAILING ADDRESS OF PUBLISHER, E PUBLISHER (Name and Complete Mailing Address)	DITOR, AND MANAGING EDITOR (T)	is item MUST NOT be blank)
(same as 4)		
EDITOR (Name and Complete Mailing Address)		
John L. Ingraham (same as 4)		
MANAGING EDITOR (Name and Complete Mailing Address)		
Linda M. Illig, acting (same as 4)		
7. OWNER (If owned by a corporation, it name and address must be stated a owning or holding I percent or more of total amount of stock. If not owned be given. If owned by a partnership or other unincorporated firm, its name tion is published by a nonprofit organization, its name and address must be	ed by a corporation, the names and addre and address, as well as that of each indiv	sses of the individual owners must
FULL NAME	COMPLETE MAI	
American Society for Microbiology	1913 I Street, N.W Washington, D.C.	
	washington, b.c.	20000
KNOWN BONDHOLDERS, MORTGAGEES, AND OTHER SECURITY H AMOUNT OF BONDS, MORTGAGES OR OTHER SECURITIES (If there FULL NAME None	OLDERS OWNING OR HOLDING 1 PE are none, so state) COMPLETE MAI	
FOR COMPLETION BY NONPROFIT ORGANIZATIONS AUTHORIZED The purpose, function, and nonprofit status of this organization and the ex-	O TO MAIL AT SPECIAL RATES (Section of the status for Federal income tax purp	on 423.12 DMM only) ioses (Check one)
(1) HAS NOT CHANGED DURING PRECEDING 12 MONTHS (2) HAS CHANGED DI PRECEDING 12 MONTHS		publisher must submit explanation of this statement.)
10. EXTENT AND NATURE OF CIRCULATION (See instructions on reverse side)	AVERAGE NO. COPIES EACH ISSUE DURING PRECEDING 12 MONTHS	ACTUAL NO. COPIES OF SINGLE ISSUE PUBLISHED NEAREST TO FILING DATE
A. TOTAL NO. COPIES (Net Press Run)	18,700	18,700
B. PAID AND/OR REQUESTED CIRCULATION 1. Sales through dealers and carriers, street vendors and counter sales		
Mail Subscription (Paid and/or requested)	14,261	14,535
C. TOTAL PAID AND/OR REQUESTED CIRCULATION (Sum of 10B1 and 10B2)	14,261	14,535
D. FREE DISTRIBUTION BY MAIL, CARRIER OR OTHER MEANS SAMPLES, COMPLIMENTARY, AND OTHER FREE COPIES	6	6
E. TOTAL DISTRIBUTION (Sum of C and D)	14,267	14,541
F. COPIES NOT DISTRIBUTED 1. Office use, left over, unaccounted, spoiled after printing	4,433	4,159
2. Return from News Agents		
G. TOTAL (Sum of E, F1 and 2-should equal net press run shown in A)	18,700	18,700
11. SIGNATURE	AND TITLE OF EDITOR BURLICUES	, BUSINESS MANAGER, OR OWNER

AUTHOR INDEX

VOLUME 45-49

Alberghina, Lilia, 45:99 Alix, Jean-Hervé, 46:281 Apirion, David, 45:502 Atlas, Ronald M., 45:180

Baca, O. G., 47:127 Bachmann, Barbara J., 47:180 Banuett, Flora, 48:299 Bardell, D., 47:121 Baum, James, 49:338 Beckwith, Jonathan R., 49:398 Behbehani, Abbas M., 47:455 Benson, Spencer A., 47:313 Bentley, Ronald, 46:241 Bernstein, Carol, 45:72 Best, D. J., 45:556, 46:128 Bickle, Thomas A., 47:345 Björkman, Monika, 46:426 Black, Robert E., 47:510 Blacklow, Neil R., 48:157 Bloch, Philip L., 47:231 Bohach, Gregory A., 48:326 Booth, Ian R., 49:359 Bostian, Keith A., 48:125 Botsford, James L., 45:620 Bulla, Lee A., Jr., 45:379 Button, D. K., 49:270

Case, Mary E., 49:338 Cavalieri, Stephen J., 48:326 Ciferri, Orio, 47:551 Clements, Mary Lou, 47:510 Clewell, Don B., 45:409 Cobley, John G., 47:579 Collins, Matthew D., 45:316 Consigli, Richard A., 45:379 Cox, John C., 47:579 Cukor, George, 48:157

de Graaf, Frits K., 46:129 DeVoe, I. W., 46:162 DiSpirito, Alan A., 49:140 Donelson, John E., 49:107 Doolittle, W. Ford, 46:1 Dorland, Rebecca B., 48:199 Drews, Gerhart, 49:59 Drlica, Karl, 48:273 Duckworth, Donna H., 45:52 Dykhuizen, Daniel E., 47:150 Eidels, Leon, 47:596 Emr, Scott, D., 47:313

Foster, T. J., 47:361 Fournier, Maurille J., 49:379 Friedman, David I., 48:299 Futai, Masamitsu, 47:285

Gaastra, Wim, 46:129 Geever, Robert, 49:338 Gegenheimer, Peter, 45:502 Georgopoulos, Costa, 48:299 Gilles, Norman H., 49:338 Gill, D. Michael, 46:86 Glenn, Jerry, 45:52 Gordon, Julian, 45:244 Gray, Michael W., 46:1 Gupta, Ramesh, 47:621 Gutell, Robin, 47:621

Hammond, R. C., 45:556, 46:128
Hardy, Simon J. S., 48:290
Hart, David A., 47:596
Hartl, Daniel L., 47:150
Hederstedt, Lars, 45:542
Herskowitz, Ira, 48:299
Higgins, I. J., 45:556, 46:128
Hirsch, Robert L., 46:71
Hoch, James A., 49:158
Hooper, Alan B., 49:140
Horiuchi, Kensuke, 49:101
Huiet, Layne, 49:338

Joklik, Wolfgang K., 45:483 Jones, Dorothy, 45:316

Kanazawa, Hiroshi, 47:285 Kaper, James B., 47:510 Knowles, Roger, 46:43 Koch, Arthur L., 45:355 Kozak, Marilyn, 47:1 Krüger, Detlev H., 45:9, 47:345

Lahti, Reijo, 47:169 Lal, Rup, 46:95 Lancaster, Wayne D., 46:191 Lengeler, J. W., 49:232 Levine, Myron M., 47:510 Logan, John S., 46:377

Marzluf, George A., 45:437 McCorquodale, D. J., 45:52 Meganathan R., 46:241 Mendelson, Neil H., 46:341 Middlebrook, John L., 48:199 Middlebrooks, Bobby L., 47:97 Mims, C. A., 45:267 Minks, Michael A., 45:244 Mortimer, Robert K., 49:181

Neidhardt, Frederick C., 47:231 Newmeyer, Forothy, 46:426 Nikaido, Hiroshi, 49:1 Noller, Harry F., 47:621 Norkin, Leonard C., 46:384 North, Michael J., 46:308

Moulder, James W., 49:298

Ogawara, Hiroshi, 45:591 Olson, Carl, 46:191 Olson, Eric R., 48:299 Ormerod, W. E., 46:296 Orr-Weaver, Terry L., 49:33 Ozeki, Hauro, 49:379

Pall, Martin L., 45:462
Paretsky, D., 47:127
Parisi, Joseph T., 49:126
Patel, Virginia, 49:338
Perkins, David D., 46:426
Phillips, Bruce A., 45:287
Phillips, Teresa A., 47:231
Piggot, Patrick J., 49:158
Poindexter, Jean Stove, 45:123
Poole, Robert K., 48:222
Postma, P. W., 49:232
Proia, Richard L., 47:596
Putnak, J. Robert, 45:287

Radford, Alan, 46:426 Randall, Linda L., 48:290 Razin, Shmuel, 49:419 Rice-Ficht, Allison C., 49:107 Robinson, Jayne B., **48:95** Roth, J. R., **47:410** Rutberg, Lars, **45:542**

Sanderson, K. E., 47:410
Saxena, D. M., 46:95
Scarborough, Gene A., 49:214
Schild, David, 49:181
Schroeder, Cornelia, 45:9
Scolnick, Edward M., 45:1
Scott, D., 45:556, 46:128
Scott, June Rothman, 48:1
Shenk, Thomas, 46:377
Silhavy, Thomas J., 47:313, 49:398
Snyder, Irvin S., 48:326
Sturani, Emmapaola, 45:99
Szostak, Jack W., 49:33

Tabor, Celia White, 49:81
Tabor, Herbert, 49:81
Taylor, Peter W., 47:46
Taylor, Richard F., 48:181
Thevelein, Johan M., 48:42
Tilly, Kit, 48:299
Tipper, Donald J., 48:125
Tuovinen, Olli H., 48:95
Tweeten, Kathleen A., 45:379
Tyler, Brett, 49:338
Tzipori, Saul, 47:84

Unny, Shakti K., 47:97

Vaara, Martii, 49:1 Vaughn, Vicki, 47:231 Venkatesan, S., 46:296 Vold, Barbara S., 49:71

Walker, Graham C., 48:60 Wallace, Douglas C., 46:208 Ward, J. B., 45:211 Wilkins, Brian, 48:24 Willets, Neil, 48:24 Woese, Carl R., 47:621

Zinder, Norton D., 49:101

SUBJECT INDEX VOLUME 45-49

Acetamide utilization fungi, 45 :437	animal papillomaviruses, 46: 191	replication inhibition by λ lysogens,
Acidophilic bacteria	Antigenic properties	45: 52
	picornavirions, 45:287	Bacteriophage T3
energy conservation, 47:579 Actinomycetes	Aortic smooth muscle cells	virus-host cell interactions,45:9
isoprenoid quinones, 45:316	cholesterol ester accumulation, 46:296 Archaebacteria	Bacteriophage T4
Adenosine 3',5'-phosphate	endosymbiont hypothesis, 46:1	transfer RNA, 45:502
fungi, 45:462	isoprenoid quinones, 45:316	Bacteriophage T5 Collb factor-induced abortive infection
procaryotes, 45:620	Arenavirus transmission	45: 52
Adenosine 3',5'-phosphate-binding pro-	fetal development in mammals, 45:267	replication inhibition by λ lysogens,
teins	vertebrate germ line, 45:267	45: 52
fungi, 45: 462	Arthropods	Bacteriophage T7
Adenosine 3',5'-phosphate-dependent pro-	virus transmission via germ line, 45:267	messenger RNAs, 45:502
tein kinase	Aspartic proteinases	virus-host cell interactions, 45:9
animals, 45:462	fungi, 46:308	Bacteriophage W31
fungi, 45:462	Asticcacaulis	inhibition by ColB2, 45:52
Adenosylmethionine hydrolase	taxonomy, 45:123	Bacteroides melaninogenicus
phage T3 or T7 virus-host cell interac-	Atheroma	menaquinone requirement, 46:241
tions, 45: 9	evolutionary hypothesis, 46:296	Beneckea harveyi
Adenovirus gene expression	Atmospheric chemistry	cyclic nucleotides, 45:620
control, 46: 377	denitrification, 46;43	BK virus
Adenovirus transmission	•	persistent infection, 46:384
vertebrate germ line, 45:267	Bacillus licheniformis	β-Lactam antibiotics
Adenylate cyclase	teichuronic acid biosynthesis, 45:211	resistance in pathogenic and producing
fungi, 45: 462	Bacillus subtilis	bacteria, 45: 591
procaryotes, 45:620	linkage map, 49: 158	Bordetella
Adhesins, host-specific fimbrial	menaquinone biosynthesis, 46:241	cyclic nucleotides, 45:620
noninvasive enterotoxigenic E. coli,	succinate dehydrogenase, 45:542	Bovine papillomavirus
46:129	transfer ribonucleic acid	immunity, 46:191
Aeration cultivation and nutrition of	gene structure and organization, 49:71	pathogenesis, 46:191
caylobacters, 45:123	Bacteria 46.42	
Aerobes	denitrifying, 46:43	Carbohydrate metabolism
isoprenoid quinones, 45:316	division, 46:341	meningococcus pathogenicity, 46: 162
α-Hemolysin	evolution of antibiotic resistance gene function, 45 :355	Carbon dioxide
E. coli, 48:326	growth, 46: 341	meningococcus pathogenicity, 46: 162 Carbon metabolism
Alcaligenes eutrophicus	isoprenoid structural types, 45:316	methanotrophs, 45 :556
cyclic nucleotides, 45:620	methane-utilizing, 45:556	Carbon, organic
Aldrin	Bacterial conjugation	denitrification, 46:43
microbial metabolism, 46:95	plasmid DNA processing, 48:24	Carbon sources
Alkylation products	Bacterial deoxyribonucleic acid	cultivation and nutrition of
phage DNA repair, 45:72	topoisomerases, 48:273	caulobacters, 45:123
Amino acid levels	Bacterial outer membrane	Catabolic pathways, microorganisms
N. crassa growth, 45:99	permeability	organochlorine insecticide effects, 46:9:
Amino acids, microorganisms	molecular basis, 49:1	Caulobacter
organochlorine insecticide effects, 46:95	Bacterial toxins	taxonomy, 45: 123
Amoebae	lethal amounts, 46:86	Caulobacters
proteinases, 46:308	Bacteriophage	caulophages, 45:123
Anaerobes	DNA, repair, 45: 72	cell structure and composition, 45:123
isoprenoid quinones, 45:316	Bacteriophage BF23	cellular differentiation, 45:123
Anemia, equine infectious	Collb factor-induced abortive infection,	cultivation and nutrition, 45:123
transmission via vertebrate germ line,	45 :52	distribution, 45:123
45:267 Animal cell mitochondria	Bacteriophage \(\lambda \)	ecology, 45: 123
deoxyribonucleic acids, 46:208	RNA processing, 45:502	taxonomy, 45: 123
Animals	Bacteriophage λ growth	Caulophage receptors
mitochondria. 46:1	interactions of phage and host macro- molecules, 48:299	caulobacters, 45:123
papillomaviruses, 46:191	Bacteriophage λ lysogens	Caulophages
Antibiotic-producing bacteria	phage replication inhibition, 45:52	host ranges, 45:123
antibiotic resistance, 45:591	Bacteriophage P2	isolation, 45 :123 lysogeny, 45 :123
Antibiotic resistance	abortive infections, 45:52	transduction, 45:123
pathogenic bacteria, 45:591	Bacteriophage replication inhibition	Cell membrane, microbial
producing bacteria, 45:591	extrachromosomal genetic elements,	organochlorine insecticide effect, 46:95
Antibiotic resistance gene function	45: 52	Cell morphology, microorganisms
evolution, 45:355	Bacteriophages	organochlorine insecticide effects, 46: 9:
Antibiotic resistance plasmids	filamentous	Chemostats
influence on phage T3 or T7 multiplica-	multiregulatory element, 49:101	selection in, 47:150
tion, 45: 9	Bacteriophage survival	Chlorobenzilate
Antibody	avoidance of DNA restriction systems	microbial metabolism, 46:95
complement-virus interactions, 46:71	of the hosts, 47: 345	Chloroplasts

Chloropropylate	topoisomerases, 48:273	microbial organochlorine insecticide me-
microbial metabolism, 46:95	mitochondria, 46:1	tabolism, 46:95
Cholesterol esters accumulation, 46:296	Deoxyribonucleic acid ligase phage DNA repair, 45:72	reovirus, 45:483
Ciliates	phage T3 or T7 virus-host cell interac-	Enzymes, microorganisms organochlorine insecticide effects, 46: 95
proteinases, 46:308	tions, 45:9	Equine infectious anemia transmission
Coagulase-negative staphylococci	Deoxyribonucleic acid, parasitic	vertebrate germ line, 45:267
Staphylococcus epidermidis	virus transmission via germ line, verte-	Erwinia
epidemiological typing, 49:126	brates, 45: 267	cyclic nucleotides, 45:620
Cocci	Deoxyribonucleic acid polymerase	Escherichia coli
isoprenoid quinones, 45: 316	phage DNA repair, 45:72	α-hemolysin, 48: 326
Coccobacilli, aerobic gram-negative	phage T3 or T7 virus-host cell interac-	cyclic nucleotides, 45:620
isoprenoid quinones, 45:316 ColB2	tions, 45:9 Deoxyribonucleic acid recombination	DNA damage inducible responses, 48:60
phage W31 inhibition, 45:52	phage T3 or T7 virus-host cell interac-	mutagenesis, 48:60
Collb factor	tions, 45:9	growth and division, 45:99
abortive phage BF23 infection, 45:52	Deoxyribonucleic acid-relaxing enzymes	menaquinone biosynthesis, 46: 241
abortive phage T5 infection, 45:52	phage T3 or T7 virus-host cell interac-	phage T7 transfection, 45:9
Colicinogenic plasmids	tions, 45: 9	respiratory chains, 48:222
influence on phage T3 or T7 multiplica-	Deoxyribonucleic acid repair	risks in cloning toxin genes, 46:86
tion, 45: 9	phage, 45: 72	transfer RNA, 45:502
Coliform bacteria, enteric	Deoxyribonucleic acid restriction systems	tsn mutations, 45:9
cyclic AMP, 45:620 Complement	phage survival, 47:345 Deoxyribonucleic acids	Escherichia coli K-12 linkage map, edition 7, 47:180
interaction with virus and virus-infected	organelles, 46: 208	Escherichia coli, noninvasive enterotoxi-
cells, 46: 71	Deoxyribonucleic acids, phages T3 and T7	genic
Complement system	injection, 45:9	host-specific fimbrial adhesins, 46:129
components and activation, 46:71	restriction analysis, 45:9	Ester-linked D-alanine residues
host response to viral infection, 46:71	Deoxyribonucleic acid synthesis	teichoic and teichuronic acid biosynthe-
Conjugation	caulobacters, 45:123	sis, 45: 211
caulobacters, 45:123	Deoxyribonucleic acid topoisomerase	Ethionine
Coryneform bacteria	phage DNA repair, 45:72	molecular aspects of effects, 46:281
isoprenoid quinones, 45:316 Cottontail rabbit (Shope) papillomavirus	Deoxyribonucleic acid-unwinding protein phage T3 or T7 virus-host cell interac-	Eubacteria
immunity, 46: 191	tions, 45:9	differences from eucaryotes, 46:1 isoprenoid quinones, 45:316
pathogenesis, 46: 191	Dieldrin	Eucaryotes
Coxiella burnetii	microbial metabolism, 46:95	cell growth and division, 45:99
Q fever, 47: 127	1,4-Dihydroxy-2-naphthoate	differences from eubacteria, 46:1
Cryptosporidiosis	bacterial menaquinone synthesis, 46:241	protein synthesis initiation,47:1
animals, 47:84	Dimorphic procaryotes	S-adenosyl-L-ethionine synthesis, 46:281
humans, 47:84	cyclic nucleotides, 45:620	Eucaryotic chloroplasts
Cyclic AMP see Adenosine 3',5'-phosphate	Double-stranded-ribonucleic acid-activated	deoxyribonucleic acids, 46:208
Cyclic nucleotides	enzyme systems interferon action, 45: 244	Eucaryotic microorganisms proteinases, 46: 308
procaryotes, 45:620	Double-stranded ribonucleic acid killer	Eucaryotic mitochondria
Cysteine proteinases	systems in yeasts, 48:125	deoxyribonucleic acids, 46:208
fungi, 46: 308	Drug resistance	Eucaryotic systems
Cytochromes	plasmid determined, 47:361	phage T3 or T7 virus-host cell interac-
mitochondria, 1, 46:	Streptococcus, 45:409	tions, 45: 9
Cytochromes $c\delta$ (f)		Evolution
plastids, 46:1	Endonuclease	antibiotic resistance gene function,
Cytomegalovirus transmission fetal development in mammals, 45 :267	procaryotic RNA processing, 45:502	45: 355 organelle genomes, 46: 208
retar development in manimars, 43.207	Endonucleases	Exonucleases
D-Alanine residues, ester-linked	phage DNA repair, 45:72	phage DNA repair, 45:72
teichnoic and teichuronic acid biosyn-	Endospore-forming rods and cocci	Extrachromosomal genetic elements
thesis, 45:211	isoprenoid quinones, 45:316 Endosulfan	phage replication inhibition, 45:52
Dehydrochlorination	microbial metabolism, 46:95	
microbial organochlorine insecticide me-	Endosymbiont hypothesis	Fatty acids
tabolism, 46: 95	proven?, 46: 1	methanotrophs, 45:556
Denitrification	Endotoxin	Ferredoxins
aquatic systems, 46:43	meningococcus pathogenicity, 46: 162	plastids, 46:1
bacteria, 46: 43 global aspects, 46: 43	Energy conservation	Fetal development, mammals virus transmission, 45 :267
methods, 46: 43	acidophilic bacteria, 47:579	F factor
physiology and biochemistry, 46: 43	Entamoeba	abortive infection, 45:52
terrestrial systems, 46:43	lipid metabolism, 46:296	Filamentous bacteriophages
Deoxyribonucleic acid	Enteric infections, bacterial	multiregulatory element, 49:101
caulobacters, 45:123	pathogenesis, 47:510	Fimbrial adhesins, host-specific
damage	Enterotoxigenic Escherichia coli, noninva-	noninvasive enterotoxigenic E. coli,
E. coli, 48:60 mutagenesis and inducible responses,	sive host-specific fimbrial adhesins, 46: 129	46:129 Flagellates
60	Enzymes	proteinases, 46:308
•		proteinaces, Torono

fungi, 45:462 Mammalian cells Flagellum Human papillomavirus caulobacters, 45:123 lipid metabolism, 46:296 pathogenesis, 46:191 Mammals Formaldehyde dehydrogenase methanotrophs, 45:556 Human viral gastroenteritis, 48:157 virus transmission during fetal develop-Formate dehydrogenase Human viral infections ment. 45:267 Manganese-dependent enzymes methanotrophs, 45:556 complement, 46:71 fungi, 45:462 F plasmids Hydrocarbons, petroleum influence on phage T3 or T7 multiplicamicrobial degradation, 45:180 Membrane binding Hydrocarbon-utilizing microorganisms succinate dehydrogenase, 45:542 tion, 45:9 taxonomic relationships, 45:180 Membrane permeability Freshwater molecular basis, 49:1 detection and enumeration of Membrane receptors caulobacters, 45:123 **Immunity** animal papillomaviruses, 46:191 bacterial toxins, 47:596 Fungal recombination, 49:33 meningococcal disease, 46:162 Menaquinone Fungi cyclic AMP, 45:462 bacterial biosynthesis, 46:241 Inorganic pyrophosphatases, 47:169 gene expression, 45:437 Insect granulosis viruses Meningococcus mitochondria, 46:1 applied and molecular aspects, 45:379 mechanisms of pathogenicity, 46:162 Mercury and organomercury compounds nitrogen metabolism, 45:437 Insecticides granulosis viruses, 45:379 mechanisms of resistance and proteinases, 46:308 detoxification, 48:95 recombination, 49:33 Insecticides, organochlorine trehalose mobilization, 48:42 See Organochlorine insecticides Messenger ribonucleic acid mitochondria, 46:1 Interferon phage T3 or T7 virus-host cell interacmolecular aspects of induction and ac-Gastroenteritis, human viral, 48:157 tion, 45:244 tions, 45:9 Gene expression Messenger ribonucleic acids fungi, 45:437 Intestinal bacteria reovirus, 45:483 menaquinone biosynthesis, 46:241 Genetic elements, extrachromosomal Metal ion resistance phage replication inhibition, 45:52 Introns plasmid determined, 47:361 evolution, 46:208 Gene transfer Metalloproteinases Streptococcus, 45:409 Iron meningococcus virulence, 46:162 fungi, 46:308 Germ line Metals Isomerization virus transmission, 45:267 cultivation and nutrition of microbial organochlorine insecticide me-Gliding bacteria tabolism, 46:95 caulobacters, 45:123 isoprenoid quinones, 45:316 Methane monooxygenase Isoprenoid quinones Glutamate dehydrogenase bacteria, 45:316 methanotrophs, 45:556 fungi, 45:437 Methane-oxidizing microorganisms Isoprenoid structural types Glutamine synthetase biology, 45:556 fungi, 45:437 bacteria, 45:316 biotechnological applications, 45:556 Glycosylation carbon metabolism, 45:556 poly(glycerol or ribitol) phosphate JC virus energy metabolism, 45:556 teichoic acids, 45:211 persistent infection, 46:384 evolution, 45:556 Glycosyl residues genetics, 45:556 teichoic acid polymer chains, 45:211 Kepone nitrogen metabolism, 45:556 Gram-negative bacteria microbial metabolism, 46:95 Methanol dehydrogenase isoprenoid quinones, 45:316 Killer systems methanotrophs, 45:556 serum activity, 46:47 ds RNA, 48:125 Methylation, ribonucleic acid Gram-positive bacteria yeasts, 48:125 interferon, 45:244 isoprenoid quinones, 45:316 Microbial growth Granulosis viruses Lactic acid bacteria kinetics, 49:270 applied and molecular aspects, 45:379 isoprenoid quinones, 45:316 Micrococcaceae Guanosine 3',5'-phosphate Lactobacillus bifidus var. pennsylvanicus isoprenoid quinones, 45:316 procaryotes, 45:620 menaquinone requirement, 46:241 Guanosine tetraphosphate Micrococcus luteus Leishmania teichuronic acid biosynthesis, 45:211 cyclic AMP metabolism in procaryotes, lipid metabolism, 46:296 Milk 45:620 Lentivirus transmission effect on parasitic protozoa, 46:296 vertebrate germ line, 45:267 Mirex Halobacteria Leukoencephalopathy, progressive multimicrobial metabolism, 46:95 endosymbiont hypothesis, 46:1 focal Mitochondria Haploid mutation and selection viral infection, 46:384 deoxyribonucleic acids, 46:208 evolution of antibiotic resistance gene Linkage maps Bacillus subtilis, 49:158 endosymbiont hypothesis, 46:1 function, 45:355 Mosquitoes Helix-destabilizing protein Lipid metabolism virus transmission via germ line, 45:267 phage DNA repair, 45:72 mammalian and protozoan cells, 46:296 Mutagenesis Lipopolysaccharide Hemorrhagic lesions E. coli DNA damage, 48:60 meningococcus pathogenicity, 46:162 cell structure and composition of Mutation, haploid Heptachlor caulobacters, 45:123 evolution of antibiotic resistance gene microbial metabolism, 46:95 meningococcus pathogenicity, 46:162 function, 45:355 Herpesvirus transmission Lipoteichoic acid carrier

teichoic acid biosynthesis, 45:211

phage replication inhibition, 45:52

lipid metabolism, 46:296

Lysogenized phage

Malaria parasite

Mycobacterium paratuberculosis menaquinone requirement, 46:241

Mycobacterium smegmatis

Mycoplasma

cyclic nucleotides, 45:620

cyclic nucleotides, 45:620

fetal development in mammals, 45:267

1,2,3,4,5,6-Hexachlorocyclohexane microbial metabolism, **46:9**5

Hormonal effects of adenylate cyclase

caulobacters, 45:123

Holdfast

caulobacters, 45:123 Oxidation Naphthalene compounds bacterial menaquinone synthesis, 46:241 microbial organochlorine insecticide memeningococcus pathogenicity, 46:162 tabolism, 46:95 Plant cell mitochondria 1-Naphthol deoxyribonucleic acids, 46:208 bacterial menaquinone synthesis, 46:241 Oxygen Neisseria gonorrhoeae denitrification, 46:43 Plant chloroplasts microbial degradation of petroleum hydeoxyribonucleic acids, 46:208 cyclic nucleotides, 45:620 Neurodegenerative diseases drocarbons, 45:180 viral origin, 46:384 mitochondria, 46:1 virus transmission via germ line, 45:267 Neurospora crassa pAMα1 chromosomal loci, 46:426 tetracycline resistance determinant, integration into host cell genome, 45:267 growth and nuclear division cycle, 45:99 45:409 qa (quinic acid) gene **Papillomaviruses** Plant virus transmission organization, 49:338 arthropod germ line, 45:267 animal, 46:191 regulation, 49:338 plant germ line, 45:267 **Papovaviruses** Plasma Nitrate reductase persistent infections, 46:384 action against trypanosomes, 46:296 denitrification, 46:43 Papovavirus transmission fungi, 45:437 Plasmid deoxyribonucleic acid processing fetal development in mammals, 45:267 Nitric oxide reductase bacterial conjugation, 48:24 vertebrate germ line, 45:267 Plasmid-determined resistance denitrification, 46:43 Parasites antimicrobial drugs, 47:361 Nitrite reductase oncoviruses, 45:267 toxic metal ions, 47:361 denitrification, 46:43 Parasitic deoxyribonucleic acid virus transmission via germ line, verte-Plasmid replication Nitrogen catabolite repression regulation, 48:1 fungi, 45:437 brates, 45:267 Nitrogen cycle Plasmids **Parasitism** denitrification, 46:43 evolution of antibiotic resistance gene intracellular function, 45:355 Nitrogen fixation comparative biology, 49:298 cyclic nucleotides in procaryotes, Streptococcus, 45:409 Parvovirus transmission 45:620 Plastids fetal development in mammals, 45:267 Nitrogen metabolism endosymbiont hypothesis, 46:1 vertebrate germ line, 45:267 molecular biology, 46:1 fungi, 45:437 Pathogenic bacteria protein and nucleic acid sequences, 46:1 methanotrophs, 45:556 antibiotic resistance, 45:591 Polar organelles Nitrogen oxides Pathogenicity caulobacters, 45:123 denitrification, 46:43 meningococcus, 46:162 Pollutants, oil Nitrogen sources Peptidoglycan cultivation and nutrition of microbial degradation, 45:180 cell structure and composition of caulobacters, 45:123 caulobacters, 45:123 Polyadenylated ribonucleic acid N. crassa growth, 45:99 Nitrous oxide reductase linkage to teichoic and teichuronic acids, 45:211 Polyadenylic acid denitrification, 46:43 Nucleic acids, microorganisms picornavirion RNA, 45:287 Perinatal virus transmission, 45:267 Polyamines organochlorine insecticide effects, 46:95 Persistent viruses, transmission Nucleoid structure fetal development in mammals, 45:267 in microorganisms, 49:81 Polyglycerol phosphate polymers Nucleotide levels Petroleum hydrocarbons N. crassa growth, 45:99 teichoic acid biosynthesis, 45:211 microbial degradation, 45:180 Polymer production Nucleotide precursors methanotrophs, 45:556 teichoic and teichuronic acids, 45:211 cultivation and nutrition of Polynucleotide sequences Nucleotides caulobacters, 45:123 animal papillomaviruses, 46:191 cultivation and nutrition of denitrification, 46:43 Polyoma virus caulobacters, 45:123 Phosphate persistent infection, 46:384 Nucleotides, cyclic cultivation and nutrition of Polyribitol phosphate polymers procaryotes, 45:620 caulobacters, 45:123 Nutrient transport teichoic acid biosynthesis, 45:211 Phosphodiesterase Polyunsaturated fat kinetics, 49:270 fungi, 45:462 effect on parasitic protozoa, 46:296 Phosphoenolpyruvate:carbohydrate phos-Postnatal virus transmission, 45:267 Oil pollutants photransferase system of bacteria, P1 prophage microbial degradation, 45:180 49:232 influence on phage T3 or T7 multiplica-**Phospholipids** Oncogenic retroviruses, rat-derived tion, 45:9 transformation by, 45:1 cell structure and composition of caulobacters, 45:123 Pressure Oncovirus transmission microbial degradation of petroleum hymethanotrophs, 45:556 vertebrate germ line, 45:267 Photosynthesis, microorganisms drocarbons, 45:180 Organelles Procaryotes genomes, 46:208 organochlorine insecticide effects, 46:95 cyclic nucleotides, 45:620 protein synthesis initiation, 47:1 Phototrophic bacteria protein synthesis initiation, 47:1 isoprenoid quinones, 45:316 Organic carbon Procaryotic proteins light-harvesting complexes, 49:59 denitrification, 46:43 sequence homologies with mitochonphotochemical reaction centers, 49:59 Organochlorine insecticides drial proteins, 46:1 Phycobiliproteins accumulation in microorganisms, 46:95 Procaryotic ribonucleic acid effects on microorganisms, 46:95 plastids, 46:1 Picornavirions processing, 45:502 metabolism in microorganisms, 46:95 Procaryotic ribonucleic acids fine structure, 45:287 microorganisms, 46:95 sequence homologies with mitochon-Picornaviruses O serogroups assembly, 45:287 drial ribonucleic acids, 46:1 E. coli fimbrial adhesins, 46:129

structure, 45:287

Pili

o-Succinvlbenzoate

bacterial menaquinone synthesis, 46:241

Progressive multifocal leukoencephalopa-

thy

viral infection, 46:384	structure, 45: 483	microbial degradation of petroleum hy-
Prophage P1	Respiratory chain	drocarbons, 45:180
influence on phage T3 or T7 multiplica-	meningococcus pathogenicity, 46: 162 Respiratory chains of <i>Escherichia coli</i> ,	Salmonella typhimurium cyclic nucleotides, 45:620
tion, 45:9 Prostheca	48: 222	Salmonella typhimurium linkage map, edi-
caulobacters, 45:123	Retroviruses, rat-derived oncogenic	tion VI, 47:410
Proteinases	transformation by, 45:1	Sandflies
eucaryotic microorganisms, 46:,308	Retrovirus transmission	virus transmission via germ line, 45:267
Protein degradation	vertebrate germ line, 45:267	Scrapie transmission
N. crassa growth, 45:99	R factor	fetal development in mammals, 45:267
Protein export	phage growth inhibition, 45:52	Seawater
bacteria, 48:290	Rheumatic carditis, streptococcal, 47:97 Rhizosphere	detection and enumeration of caulobacters. 45: 123
Protein kinase, adenosine 3',5'-phosphate- dependent	denitrification, 46:43	Secondary alcohol dehydrogenase
animals, 45:462	Ribonuclease BN	methanotrophs, 45:556
fungi, 45: 462	procaryotic RNA processing, 45:502	Sediments
Protein localization, mechanism of, 47:313	Ribonuclease D	denitrification, 46:43
Proteins	procaryotic RNA processing, 45:502	Selection
cell structure and composition of	Ribonuclease E	evolution of antibiotic resistance gene
caulobacters, 45:123	procaryotic RNA processing, 45:502	function, 45:355
lethal for humans, 46:86	Ribonuclease III	Serine pathway methanotrophs, 45: 556
mitochondria, 46:1 plastids, 46:1	procaryotic RNA processing, 45:502 Ribonuclease O	Serine proteinases
reoviruses, 45:483	procaryotic RNA processing, 45:502	fungi, 46: 308
Proteins, microorganisms	Ribonuclease P	Serum activity against gram-negative bac-
organochlorine insecticide effects, 46:95	procaryotic RNA processing, 45:502	teria, 46: 47
Proteins, picornaviral	Ribonuclease P2	Sex pheromones
synthesis and processing, 45:287	procaryotic RNA processing, 45:502	S. faecalis, 45: 409
Protein synthesis initiation	Ribonucleic acid	Shigella sonnei D ₂ 371-48
eucaryotes, 47:1	mitochondria, 46:1	influence on phage T3 or T7 multiplica- tion, 45:9
organelles, 47:1	picornavirus particles, 45: 287 plastids, 46: 1	Shikimate
procaryotes, 47:1 Proton gradient	Ribonucleic acid cap structure	bacterial menaquinone synthesis, 46:241
extracytoplasmic oxidation of substrate,	interferon action, 45:244	Sigmavirus transmission
49: 140	Ribonucleic acid methylation	arthropod germ line, 45:267
Proton-translocating adenosine triphospha-	interferon, 45:244	Simian virus 40
tase (F_0, F_1)	Ribonucleic acid polymerases	persistent infection, 46:384
structure and function, 47:285	mitochondria, 46:1	Single-celled organisms
Protozoa	Ribonucleic acid primer synthesis phage T3 or T7 virus-host cell interac-	vertical virus transmission, 45: 267 Slime molds
mitochondria, 46:1 proteinases, 46:308	tions, 45:9	proteinases, 46: 308
Protozoan cells	Ribonucleic acid, procaryotic	Smallpox story, 47:455
lipid metabolism, 46:296	processing, 45:502	Soil
Pseudomonas aeruginosa	Ribonucleic acid-replicating enzymes	denitrification, 46:43
cyclic nucleotides, 45:620	picornaviruses, 45:287	detection and enumeration of
Purine catabolism	Ribonucleic acid species	caulobacters, 45:123
fungi, 45: 437	N. crassa growth, 45:99	Spirulina, the edible microorganism,
Pyrophosphatases, inorganic, 47:169	Ribonucleic acid synthesis caulobacters, 45:123	47:551 Sporozoa
Q fever, 47: 127	Ribonucleic acid transcription	proteinases, 46: 308
Quayle cycle	reovirus, 45:483	Spumavirus transmission
methanotrophs, 45:556	Ribonucleic M5	vertebrate germ line, 45:267
Quinones, isoprenoid	procaryotic RNA processing, 45:502	Stalked cells
bacteria, 45: 316	Ribosomal ribonucleic acid	caulobacters, 45:123
	N. crassa growth, 45:99	Staphylococcus aureus
Rat-derived oncogenic retroviruses	Ribosomal ribonucleic acids	menaquinone biosynthesis, 46:241
transformation by, 45:1	plastids, 46: 1 Ribosomal ribonucleic acids, 16S-like	Staphylococcus epidermidis epidemiological typing
Rat liver	higher-order structure, 47:621	coagulase-negative staphylococci,
S-adenosyl-L-ethionine synthesis, 46:281 Reductants	Ribulose monophosphate cycle	49: 126
extracytoplasmic oxidation, 49:,140	methanotrophs, 45:556	Streptococcal rheumatic carditis, 47:97
Reductive dechlorination	Rods	Streptococcus
microbial organochlorine insecticide me-	isoprenoid quinones, 45:316	drug resistance, 45:409
tabolism, 46:95	Rubella transmission	gene transfer, 45:409
Reoviruses	fetal development in mammals, 45:267	plasmids, 45:409
discovery, 45:483	Saccharomyces cerevisiae	Streptococcus faecalis sex pheromones, 45:409
enzymes, 45 :483 proteins, 45 :483	genetic map, edition 49: 9, 181	Streptomyces
RNA transcription, 45:483	S-Adenosyl-L-ethionine	antibiotic resistance, 45:591
Reovirus genome	effects, 46:281	Succinate dehydrogenase
function, 45: 483	S-Adenosyl-L-methionine synthetases	biosynthesis, 45:542
structure, 45: 483	bacterial, 46: 281	determination of activity, 45:542
Reovirus particle	Salinity	genetics, 45 :542

Salinity

Reovirus particle

genetics, 45:542

mechanisms of action, 48:199

Transcription

methane-utilizing, 45:556

S-adenosyl-L-ethionine synthesis, 46:281

membrane binding, 45:542 adenovirus gene expression, 46:377 deoxyribonucleic acids, 46:208 structure, 45:542 caulobacters, 45:123 Vascular plant chloroplasts Sulfur metabolism Transfer ribonucleic acid deoxyribonucleic acids, 46:208 meningococcus pathogenicity, 46:162 Bacillus subtilis Vertebrates Superoxide dismutase gene structure and organization, 49:71 virus transmission via germ line, 45:267 mitochondria, 46:1 procaryotes, 45:502 Vertical virus transmission, 45:267 Transfer ribonucleic acids Swarmer cells Vibrio cholerae caulobacters, 45:123 plastids, 46:1 cyclic nucleotides, 45:620 Translation Vibrio harveyi Teichoic acids adenovirus gene expression, 46:377 cyclic nucleotides, 45:620 assembly, 45:211 caulobacters, 45:123 Viral gastroenteritis, human, 48:157 biosynthesis, 45:211 Transmembrane solute movements Viral infection location, 45:211 binding energy, 49:214 complement system, 46:71 conformational change, 49:214 Teichuronic acids Viral infections assembly, 45:211 mechanism, 49:214 persistent, 46:384 biosynthesis, 45:211 Trehalose mobilization in fungi, 48:42 Virolysis location, 45:211 Tricarboxylic acid cycle complement, 46:71 methanotrophs, 45:556 Temperature Virus cultivation and nutrition of 1,1,1,-Trichloro-2-2-bis complement, 46:71 caulobacters, 45:123 (p-chlorophenyl)ethane microbial me-Viruses denitrification tabolism, 46:95 vertical transmission, 45:267 effect on N. crassa growth, 45:99 Trimethoprim Virus-host cell interactions microbial degradation of petroleum hyevolution of resistance gene function, phages T3 and T7, 45:9 drocarbons, 45:180 45:355 Virus-infected cells Tetracycline resistance determinant Triterpenoids, bacterial, 48:157 complement, 46:71 pAMα1, 45:409 Trypanosoma brucei Vitamin K T-even phages, rII mutants plasma trypanocidal activity, 46:296 bacterial biosynthesis, 46:241 replication inhibition by λ lysogens, Trypanosoma lewisi VPg inhibition, 46:296 picornavirion RNA, 45:287 Thermoplasma Trypanosoma vivax endosymbiont hypothesis, 46:1 inhibition, **46:296** Waste treatment Thymine dimers Trypanosome denitrification, 46:43 phage DNA repair, 45:72 antigenic variation Water column Ticks molecular biology, 49:107 denitrification, 46:43 virus transmission via germ line, 45:267 **Trypanosomes Toxins** lipid metabolism, 46:296 Yeast membrane toxins, 47:596 mitochondria, 46:1 Toxins, bacterial Ultraviolet photoproducts Yeasts lethal amounts, 46:86 phage DNA repair, 45:72 ds RNA killer systems, 48:125

Vascular plant cell mitochondria

1986 APPLICATION FOR STUDENT MEMBERSHIP IN THE **AMERICAN SOCIETY FOR MICROBIOLOGY**

1913 I Street, NW • Washington, DC 20006 • (202) 833-9680

				N U.S. FUNDS	
Eligibility	Any matriculated student majoring in microbiology or a Student Members have all the privileges of membership Members receive the monthly ASM News and are entitle rates.	except the right to	vote and hold offi	ce in the Society Stude	
Initiation	Memberships are initiated and renewed in January each ye nominations received prior to November 1 are credited to the current year are furnished, if available. Nominations re January.	ne current vear, and	back issues of the	e selected publications fo	
	NAME FIRST INITIAL				
	ADDRESS	LAST			
	CITY				
	PHONE NUMBER ()YEA	ZIP/POS	STAL CODE	COUNTRY SEX	
	HIGHEST DEGREE	SCHOOL _			
	MAJOR FIELD OF STUDY				
	SIGNATURE OF NOMINEE				
	SIGNATURE OF CHAIRMAN OF MAJOR DEPARTMENT				
	*NOMINATED BY (1)				
	SIGNATURE OF ASM MEMBER *If your departmental chairman is a member of the ASM, a nominating signature is not required. If you are not associated with an ASM nominating member, you can still send in this member application form and we will contact you. Be sure to include your dues.				
	monimating member, you can still send in this member applicatio	n form and we will co	oniaci you. Be sure	to include your dues.	
	Please check:	n form and we will co	ontact you. Be sure	to include your dues.	
	Please check:		,	,,	
		s (in U.S. dollars o	,	,,	
Journals	Please check: ☐ Enclosed is my Membership Fee, includes ASM New	s (in U.S. dollars o	,	,,	
Journals	Please check: ☐ Enclosed is my Membership Fee, includes ASM New	s (in U.S. dollars o	,	,,	
Journals	Please check: ☐ Enclosed is my Membership Fee, includes ASM New	s (in U.S. dollars or per Price(s):	nly)	\$10	
Journals	Please check: Enclosed is my Membership Fee, includes ASM New Please send me the following ASM journal(s) at Membership Fee, includes ASM New Antimicrobial Agents and Chemotherapy Applied and Environmental Microbiology	s (in U.S. dollars of per Price(s): U.S. \$35 35	Non-U.S.	\$10	
Journals	Please check: □ Enclosed is my Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM journal(s) at Membership	s (in U.S. dollars of per Price(s): U.S. \$35 35 41	Non-U.S. \$49	\$10	
Journals	Please check: □ Enclosed is my Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Please send me the following ASM journal(s) at Membership Please send me the following ASM journal(s) at Membership Please send me the following ASM journal(s) at Membership Please send me the following ASM journal(s) at Membership Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Please send me the following ASM journal(s) at Memb	s (in U.S. dollars of per Price(s): U.S. \$35 35 41 41	Non-U.S. \$49 49	\$10	
Journals	Please check: □ Enclosed is my Membership Fee, includes ASM New □ Please send me the following ASM journal(s) at Membership Please	s (in U.S. dollars or per Price(s): U.S. \$35 35 41 41 41 35	Non-U.S. \$49 49 54 54 35	\$10	
Journals	Please check: Enclosed is my Membership Fee, includes ASM New Please send me the following ASM journal(s) at Membership Fee, includes ASM New Antimicrobial Agents and Chemotherapy Applied and Environmental Microbiology Molecular and Cellular Biology Infection and Immunity International Journal of Systematic Bacteriology Journal of Bacteriology	u.S. \$35 41 41 35 41	Non-U.S. \$49 49 54 54 35	\$10	
Journals	Please check: Enclosed is my Membership Fee, includes ASM New Please send me the following ASM journal(s) at Membership Fee, includes ASM New Antimicrobial Agents and Chemotherapy Applied and Environmental Microbiology Molecular and Cellular Biology Infection and Immunity International Journal of Systematic Bacteriology Journal of Bacteriology Journal of Clinical Microbiology	s (in U.S. dollars or per Price(s): U.S. \$35 35 41 41 35 41 35	Non-U.S. \$49 49 54 54 35 54 49	\$10	
Journals	Please check: Enclosed is my Membership Fee, includes ASM New Please send me the following ASM journal(s) at Membership Fee, includes ASM New Antimicrobial Agents and Chemotherapy Applied and Environmental Microbiology Molecular and Cellular Biology Infection and Immunity International Journal of Systematic Bacteriology Journal of Bacteriology Journal of Clinical Microbiology Journal of Virology	u.S. \$35 41 41 35 41 35 41	Non-U.S. \$49 49 54 54 35 54 49 54	\$10	
Journals	Please check: Enclosed is my Membership Fee, includes ASM New Please send me the following ASM journal(s) at Membership Fee, includes ASM New Antimicrobial Agents and Chemotherapy Applied and Environmental Microbiology Molecular and Cellular Biology Infection and Immunity International Journal of Systematic Bacteriology Journal of Bacteriology Journal of Clinical Microbiology	s (in U.S. dollars or per Price(s): U.S. \$35 35 41 41 35 41 35	Non-U.S. \$49 49 54 54 35 54 49 54 29	Amount \$	
Journals	Please check: Enclosed is my Membership Fee, includes ASM New Please send me the following ASM journal(s) at Membership Fee, includes ASM New Antimicrobial Agents and Chemotherapy Applied and Environmental Microbiology Molecular and Cellular Biology Infection and Immunity International Journal of Systematic Bacteriology Journal of Bacteriology Journal of Clinical Microbiology Journal of Virology	u.s. \$35 35 41 41 35 41 35 41 35	Non-U.S. \$49 49 54 54 35 54 49 54 29	Amount \$	
Journals	Please check: Enclosed is my Membership Fee, includes ASM New Please send me the following ASM journal(s) at Membership Fee, includes ASM New Antimicrobial Agents and Chemotherapy Applied and Environmental Microbiology Molecular and Cellular Biology Infection and Immunity International Journal of Systematic Bacteriology Journal of Bacteriology Journal of Clinical Microbiology Journal of Virology	u.s. \$35 35 41 41 35 41 35 41 35	Non-U.S. \$49 49 54 54 35 54 49 54 29 Total Journal	Amount \$	

PAYMENT IN U.S. DOLLARS MUST ACCOMPANY APPLICATION

Rates are for 1986 only.

A membership card and the journal(s) of your choice will be sent within 90 days upon completion of processing. Dues for individual membership in ASM are tax deductible.

Non-U.S. applicants remit in U.S. dollars by check or draft payable to ASM through a U.S. bank located within the Continental U.S. Applicants from Canada may use check made out in U.S. dollars and drawn on a Canadian bank.

U.S. and non-U.S. applicants may choose to pay with VISA or MasterCard. If that is your preference, please fill in the box below.

UVISA # UMASTERCARD # _	EXPIRATION DATE
TODAY'S DATE	SIGNATURE Minimum Charge \$15.00